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Research Article

Overview of the distribution and biogeography of the Heteroptera (Hemiptera) Collection in The Biodiversity Science Museum of Atatürk University, Erzurum-Türkiye (ABBM)

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ABSTRACT: This study reviewed faunistic and systematic studies on the Heteroptera fauna collected from numerous localities in Anatolia, particularly Eastern Anatolia between 1963 and 2017 and their distribution and biogeography are analyzed material in Atatürk University Biodiversity Science Museum, Erzurum, Türkiye (ABBM). Totally, 407 species in 221 genera belonging to the following 30 families are recorded. It was determined that 357 species were from Eastern Anatolia, 105 species from South-eastern Anatolia, 156 species from Black Sea, 171 species from Central Anatolia, 201 species from Mediterranea, 121 species from Aegean and 146 species from Marmara. Species composition, diversity and proportion of endemism varies considerably among the geographic regions of the country.

KEYWORDS: Heteroptera, Distribution, Biogeography, Atatürk University Biodiversity Science Museum (ABBM), Erzurum, Türkiye

INTRODUCTION

Insects are the most diverse group, accounting for more than half of the world's identified organisms. The order Hemiptera is the fifth largest order among the insect orders (Cassis et al., 2006; Zhang, 2011). The Heteroptera known as true bugs, is a suborder of the Hemiptera and represent the largest and most diverse group of hemimetabolous insects. This diverse group exhibiting both phytophagous and zoophagous feeding habits affects nearly every aspect of our environment (Schuh & Slater, 1995). Their roles as plant feeders, hemolymph-sucking parasites, invertebrate predators, or water-quality indicators

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make them unquestionably important organisms in our environment (Cassis et al., 2006; Henry, 2017). Worldwide are more than 45.254 species and 6184 genera. The numbers in the Palearctic regions are 9.365 species and 1632 genera (Aukema et al., 2013; Henry, 2017).

Türkiye occupies Asia Minor between the Mediterranean Sea and the Black Sea and stretches into continental Europe. It is a mountainous country averaging about 1000 meters in altitude. The topographic and climatic diversity of the region are important preconditions for the development of a rich and diverse fauna. Türkiye is generally divided into seven biogeographical regions. These are the Marmara Region, the Aegean Region, the Mediterranean Region, the Black Sea Region, and the Central, Eastern and South Eastern Anatolian Regions (Fig.1) (Yıldırım 2012a, b; Yazıcı et al., 2019). It has been known to possess a rich fauna of Heteroptera. Thus, some faunistic and systematic studies about the Heteroptera have been conducted by both foreign and native researchers in Türkiye. However, no attempt has been undertaken to evaluate the distribution and biogeography of Heteroptera in Türkiye. Yet, such a study is essential for researchers who are interested in Miridae in the West Palaearctic region including Türkiye.

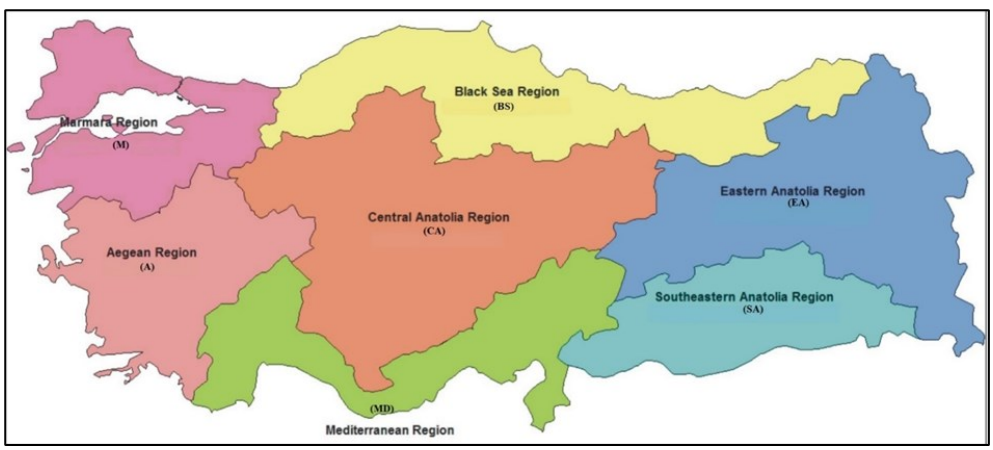

Figure 1. Biogeographical map of Türkiye (1/3.200.000) (Anonymous, 2024).

The knowledge of the Heteroptera fauna of Türkiye was first summarized by the works of Hoberlandt (1952, 1956). In the first study conducted in 1952 were reported 66 species and in the study in 1956 were reported 862 species. Later, Seidenstücker (1957, 1958, 1960), Wagner (1959, 1960, 1966), Linnavuori (1965), Tuatay et al. (1966, 1972), Önder (1976, 1980, 1982), Lodos & Önder (1978, 1979, 1980, 1982, 1983), Lodos et al. (1978, 1984, 1998, 1999, 2003), Önder et al. (1981, 1983, 1984, 1995a, 1995b, 2006), Pehlivan (1981), Çakır & Önder (1990), Çam (1993), Fent & Aktaç (1999, 2007, 2009), Tezcan & Önder (1999, 2003), Özsaraç & Kıyak (2001), Kıyak et al. (2004), Özgen et al. (2005a,b), Dursun (2009, 2011a, b), Dursun & Fent (2009, 2011a,b, 2016, 2017), Abacıgil et al. (2010), Fent (2010, 2011), Kıyak & Akar (2010), Matocq & Özgen (2010), Yıldırım et al. (2010, 2011, 2013a,b), Fent & Japoshvili (2012), Özgen (2012), Maral et al. (2013), Tezcan et al. (2013), Matocq et al. (2014), Yazıcı et al. (2014, 2015a,b), Küçükbasmacı & Kıyak (2015), Kıyak (2016), Yazıcı & Yıldırım (2016a,b,c), Çerçi & Koçak (2017), Yazıcı (2017), Aysal & Kıvan (2018), Çerçi et al. (2018), Fent & Dursun (2019, 2022), Özgen & Dioli (2019), Zengin & Dursun (2019) Çerçi & Tezcan (2020), Tezcan (2020), Akman & Dursun (2021), Çerçi & Özgen (2021), Kıyak & Baş (2021), Yılmaz & Dursun (2022), Çerçi et al. (2024) reported many species from Türkiye. In Türkiye more than 1500 species and 40 families of Heteroptera were recorded (Önder et al., 2006; Tezcan 2020, 2024). However, according to the latest research conducted by Çerçi et al. in 2024, 1668 species of Heteroptera have been recorded from Türkiye (664 species in the European part and

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1633 species in the Anatolian part) until now.

Their findings emphasized that despite the abundant research devoted over the last 150 years to the Heteroptera fauna of Türkiye, it remains incomplete in the majority, if not in all, of the regions.

In addition, it strongly encourages further research, particularly in regions with small numbers of recorded species. This endeavor will undoubtedly lead to numerous novel discoveries and provide a better understanding of the true Heteroptera diversity in Türkiye. In that case, there is much challenging work to be done to understand better this taxonomically complex and economically important group of fascinating insects.

The Entomology Museum, Erzurum, Türkiye (EMET), located in the Plant Protection Department of Atatürk University Faculty of Agriculture, has been an important resource for many academics who have been doing scientific studies and research for a long time. In this museum, which was established within Atatürk University in 1966 in order to reveal the insect diversity in our country, there are more than 200 thousand insect individuals collected from various regions of Türkiye and different countries, including more than 10 thousand identified species and more than 100 insect species that are new to world literature. This museum is among the international insect museums and was a unit where many scientists from home and abroad carried out their research and project work. However, the materials in this museum were transferred to Atatürk University Biodiversity Science Museum (ABBM), Erzurum, Türkiye, which was established within Atatürk University in 2020, and all materials are kept here. This museum, as the first nature museum in Türkiye, preserves biological riches collected from many regions of our country. In this study, all of the samples examined are preserved at Atatürk University Biodiversity Science Museum (ABBM).

MATERIAL AND METHODS

In this paper, the previous publications on the Heteroptera of Atatürk University Biodiversity Science Museum (ABBM) are reviewed and the distribution and biogeography of the Turkish fauna of Heteroptera have been analyzed.

In addition, the endemic species are also discussed. The names of the taxa to which the specimens in the museum collection belong were reviewed for homonyms, synonyms, or incorrect spellings, and if there were any problems, they were updated with valid names.

In updating the names, the Index to Organism Names (ION) based on the Thomson Reuters database was used (Anonymous, 2015a), the Planetary Biodiversity Inventory (PBI) supported by the National Science Foundation (NSF) (Anonymous, 2015b) and the Dutch Entomological Institute. Contains all information in the Catalog of Heteroptera of the Palaearctic Region (Aukema, 2022) volumes I-VI (Aukema & Rieger, 1995, 1996, 1999, 2001, 2006; Aukema *et al.* 2013), published by the Society of Heteroptera of the Palaearctic Region (1995-2013) database was used.

All examined samples are preserved at Atatürk University Biodiversity Science Museum (ABBM), Erzurum, Türkiye. The classification of identified all specimens in this collection into taxa is given and listed in the table below (Table 1).

RESULTS

As a result, 4 species in 2 genera of Gerromorpha, 10 species in 5 genera of Nepomorpha, 3 species in one genus of Leptopodomorpha, 177 species in 93 genera of Cimicomorpha and 213 species in 120 genera of Pentatomomorpha are recorded. In total, 407 species belonging to 221 genera of 30 families of Heteroptera are recorded from Atatürk University Biodiversity Science Museum (ABBM) (Table 1).

Table 1: Distribution of Heteroptera in geographic regions of Türkiye.

Names of taxa	EA	SA	BS	CA	MD	A	M
Infraorder Gerromorpha							
Family Gerridae Leach, 1815							
Genus *Aquarius* Schellenberg, 1800							
Aquarius paludum (Fabricius, 1794)				+	+		
Aquarius ventralis (Fieber, 1860)	+		+		+		
Genus *Gerris* Fabricius, 1794							
Gerris (*Gerris*) *argentatus* Schummel, 1832	+					+	
Gerris (*Gerriselloides*) *lateralis* Schummel, 1832	+		+	+	+	+	
Infraorder Nepomorpha							
Family Belostomatidae Leach, 1815							
Genus *Lethocerus* Mayr, 1853							
Lethocerus (*Lethocerus*) *patruelis* (Stál, 1854)					+		+
Family Corixidae Leach, 1815							
Genus *Corixa* Geoffroy, 1762							
Corixa affinis Leach, 1817				+			
Corixa panzeri Fieber, 1848	+						
Corixa punctata (Illiger, 1807)				+			
Genus *Sigara* Fabricius, 1775							
Sigara (*Pseudovermicorixa*) *nigrolineata* (Fieber, 1848)	+						
Sigara (*Vermicorixa*) *lateralis* (Leach, 1817)	+						
Family Nepidae Latreille, 1802							
Genus *Nepa* Linnaeus, 1758							
Nepa cinerea Linnaeus, 1758				+			
Family Notonectidae Latreille, 1802							
Genus *Notonecta* Linnaeus, 1758							
Notonecta maculata Fabricius, 1794		+			+		
Notonecta glauca Linnaeus, 1758		+		+			
Notonecta meridionalis Poisson, 1926	+			+			
Infraorder Leptopodomorpha							
Family Saldidae Amyot & Serville, 1843							
Genus *Saldula* Van Duzee, 1914							
Saldula amplicollis (Reuter, 1891)	+						

Saldula arenicola (Scholtz, 1847)	+						
Saldula pallipes (Fabricius, 1794)	+						
Infraorder Cimicomorpha							
Family Anthocoridae Fieber, 1836							
Genus *Anthocoris* Fallén, 1814							
Anthocoris nemoralis (Fabricius, 1794)	+				+		
Anthocoris nemorum (Linnaeus, 1761)	+				+		
Anthocoris pilosus (Jakovlev, 1877)	+		+	+	+		
Genus *Orius* Wolff, 1811							
Orius (*Heterorius*) *minutus* (Linnaeus, 1758)	+	+	+		+		
Orius (*Orius*) *niger* (Wolff, 1811)	+	+	+	+	+	+	+
Genus *Temnostethus* Fieber, 1860							
Temnostethus (*Ectemnus*) *reduvinus* (Herrich-Schaeffer, 1850)	+		+		+		
Temnostethus (*Montandoniella*) *dacicus* (Puton, 1888)	+				+		
Genus *Xylocoris* Dufour, 1831							
Xylocoris (*Xylocoris*) *ciliatus* (Jakovlev, 1877)	+				+		
Family Lyctocoridae Reuter, 1884							
Genus *Lyctocoris* Hahn, 1836							
Lyctocoris dimidiatus (Spinola, 1837)	+						
Family Miridae Hahn, 1831							
Genus *Acetropis* Fieber, 1858							
Acetropis carinata (Herrich-Schaeffer, 1841)	+			+	+	+	
Genus *Adelphocoris* Reuter, 1896							
Adelphocoris lineolatus (Goeze, 1778)	+	+	+	+	+	+	+
Adelphocoris seticornis (Fabricius, 1775)	+		+				+
Adelphocoris vandalicus (Rossi, 1790)	+	+	+	+	+	+	+
Genus *Agnocoris* Reuter, 1875							
Agnocoris rubicundus (Fallén, 1807)	+		+	+	+		+
Genus *Alloeonotus* Fieber, 1858							
Alloeonotus fulvipes (Scopoli, 1763)	+			+			+
Genus *Alloeotomus* Fieber, 1858							
Alloeotomus gothicus (Fallén, 1807)	+	+	+			+	+
Genus *Amblytylus* Fieber, 1858							
Amblytylus nasutus (Kirschbaum, 1856)	+			+	+	+	+

Genus *Anapus* Stål, 1858							
Anapus dorsalis (Reuter, 1890)	+	+	+	+	+	+	
Genus *Aphanosoma* A. Costa, 1842							
Aphanosoma italicum A. Costa, 1842	+			+			+
Genus *Apolygus* China, 1941							
Apolygus lucorum (Meyer Dur, 1843)	+			+			
Genus *Atomoscelis* Reute,r 1875							
Atomoscelis onustus (Fieber, 1861)	+	+	+	+	+		+
Genus *Blepharidopterus* Kolenati, 1845							
Blepharidopterus angulatus (Fallén, 1807)	+		+	+			
Genus *Brachycoleus* Fieber, 1858							
Brachycoleus decolor Reuter, 1887	+	+		+	+		+
Brachycoleus lineellus Jakovlev, 1884	+	+		+	+	+	+
Genus *Brachynotocoris* Reuter, 1880							
Brachynotocoris puncticornis Reuter, 1880	+	+		+	+		
Genus *Calocoris* Fieber, 1858							
Calocoris angularis Fieber ,1864	+		+	+	+	+	+
Calocoris nebulosus Fieber, 1864	+				+	+	+
Calocoris nemoralis (Fabricius, 1787)					+		
Calocoris roseomaculatus (De Geer, 1773)	+	+	+	+	+	+	+
Genus *Camponotidea* Reuter, 1879							
Camponotidea fieberi Reuter, 1879					+		
Genus *Campylomma* Reuter, 1878							
Campylomma diversicornis Reuter, 1878	+	+			+	+	+
Campylomma nicolasi Puton & Reuter, 1883	+	+	+	+	+	+	+
Campylomma verbasci (Meyer-Dür, 1843)	+	+	+	+	+	+	+
Genus *Capsus* Fabricius, 1803							
Capsus ater (Linnaeus, 1758)	+		+				+
Genus *Charagochilus* Fieber, 1858							
Charagochilus gyllenhalii (Fallén, 1807)	+	+	+	+	+	+	+
Genus *Chlamydatus* Curtis, 1833							
Chlamydatus pullus (Reuter, 1870)	+	+	+	+	+	+	+
Genus *Chlorillus* Kerzhner, 1962							
Chlorillus pictus (Fieber, 1864)	+						
Genus *Closterotomus* Fieber, 1858							

Closterotomus costae (Reuter ,1888)					+		
Closterotomus histrio Reuter, 1877	+			+	+	+	
Closterotomus kroesus (Seidenstücker, 1977)			+		+		
Closterotomus norvegicus (Gmelin, 1790)	+		+	+	+	+	+
Genus *Conostethus* Fieber, 1858							
Conostethus roseus (Fallén, 1807)	+			+	+	+	
Genus *Creontiades* Distant, 1883							
Creontiades pallidus (Rambur, 1839)	+	+			+	+	
Genus *Criocoris* Fieber, 1858							
Criocoris crassicornis (Hahn, 1834)	+						
Genus *Deraeocoris* Kirschbaum, 1856							
Deraeocoris (*Camptobrochis*) *pallens* (Reuter, 1904)	+	+			+	+	
Deraeocoris (*Camptobrochis*) *punctulatus* (Fallén, 1807)	+	+	+	+	+	+	+
Deraeocoris (*Camptobrochis*) *serenus* (Douglas & Scott, 1868)	+	+	+	+	+	+	+
Deraeocoris (*Deraeocoris*) *ruber* (Linnaeus, 1758)	+		+	+	+	+	+
Deraeocoris (*Deraeocoris*) *rutilus* (Herrich-Schäffer, 1838)	+	+	+	+	+	+	+
Deraeocoris (*Deraeocoris*) *ventralis* Reuter, 1904	+				+	+	+
Deraeocoris (*Knightocapsus*) *lutescens* (Schilling, 1837)	+		+	+		+	+
Genus *Dionconotus* Reuter, 1894							
Dionconotus neglectus f. major Wagner, 1968					+		
Genus *Ephippiocoris* Poppius, 1912							
Ephippiocoris lunatus Poppius, 1912	+						
Genus *Europiella* Reuter, 1909							
Europiella alpina (Reuter, 1875)	+			+			
Genus *Eurycolpus* Reuter, 1875							
**Eurycolpus aureolus* Seidenstücker, 1961	+	+		+	+		
Genus *Euryopicoris* Reuter, 1875							
Euryopicoris nitidus (Meyer-Dur, 1843)	+				+	+	
Genus *Globiceps* Lepeletier & Serville, 1825							
Globiceps fulvicollis Jakovlev, 1877	+						+
Genus *Grypocoris* Douglas & Scott, 1868							
Grypocoris fieberi Douglas & Scott, 1868	+	+	+	+	+		

Genus *Halticus* Hahn, 1833							
Halticus apterus (Linnaeus, 1758)	+		+	+	+	+	
Halticus luteicollis (Panzer, 1804)	+	+	+	+	+	+	+
Genus *Heterocordylus* Fieber, 1858							
Heterocordylus tumidicornis (Herrich-Schäffer, 1835)	+		+			+	+
Genus *Hoplomachus* Fieber, 1858							
Hoplomachus thunbergii (Fallen, 1807)	+						
Genus *Horistus* Fieber, 1860							
Horistus (Horistus) infuscatus (Brullé, 1832)	+						
Horistus orientalis (Gmelin, 1790)	+	+					
Horistus turcomanus (Horvath, 1889)	+				+		
Genus *Leptopterna* Fieber, 1858							
Leptopterna ferrugata (Fallén, 1807)	+			+			+
Genus *Liocoris* Fieber, 1858							
Liocoris tripustulatus (Fabricius, 1781)	+	+	+	+	+	+	+
Genus *Lygus* Hahn, 1833							
Lygus gemellatus (Herrich-Schaeffer, 1835)	+	+		+	+		+
Lygus pratensis (Linnaeus, 1758)	+	+	+	+	+	+	+
Lygus rugulipennis Poppius, 1911	+	+	+	+	+	+	+
Genus *Macrolophus* Fiebe,r 1858							
Macrolophus costalis Fieber, 1858	+		+	+	+	+	+
Macrolophus melanotoma (A. Costa, 1853)	+	+		+			
Genus *Macrotylus* Fieber, 1858							
Macrotylus herrichi (Reuter, 1873)	+	+		+	+		
Genus *Malacocoris* Fieber, 1858							
Malacocoris chlorizans (Panze,r 1794)	+		+	+	+		+
Genus *Megacoelum* Fieber, 1858							
Megacoelum sp. cf. *brevirostre* Reuter, 1879	+						
Genus *Megaloceroea* Fieber, 1858							
Megaloceroea recticornis (Geoffroy, 1785)	+			+	+	+	+
Genus *Megalocoleus* Reuter, 1890							
Megalocoleus molliculus (Fallén, 1807)	+	+		+	+	+	
Genus *Monosynamma* J. Scott, 1864							
Monosynamma bohemanni (Fallén, 1829)	+	+		+			+

Genus *Nanopsallus* Wagner, 1952							
Nanopsallus carduellus (Horvath, 1888)	+	+		+	+	+	+
Genus *Notostira* Fieber, 1858							
Notostira elongata (Geoffroy, 1785)	+		+	+			+
Notostira erratica (Linnaeus, 1758)	+	+	+	+	+	+	+
Notostira poppiusi Reuter, 1911	+						
Genus *Oncotylus* Fieber, 1858							
Oncotylus (*Cylindromelus*) *setulosus* (Herrich-Schaeffer, 1837)	+	+		+	+		+
Oncotylus (*Oncotylus*) *punctipes* Reuter, 1875	+					+	
Oncotylus (*Oncotylus*) *pyrethri* (Becker, 1864)	+			+	+		
Oncotylus (*Oncotylus*) *viridiflavus* (Goeze, 1778)	+	+	+	+	+	+	+
Genus *Opisthotaenia* Reuter, 1901							
Opisthotaenia fulvipes Reuter, 1901	+	+	+	+		+	+
Genus *Orthocephalus* Fieber, 1858							
Orthocephalus saltator (Hahn, 1835)	+	+			+	+	+
Orthocephalus vittipennis (Herrich-Schaeffer, 1835)	+	+			+		+
Genus *Orthops* Fieber, 1858							
Orthops (*Montanorthops*) *campestris* (Linnaeus 1758)	+		+	+	+	+	+
Orthops (*Montanorthops*) *forelii* Fieber, 1858	+			+			
Orthops (*Montanorthops*) *montanus* (Schilling, 1838)	+				+	+	
Orthops (*Orthops*) *basalis* (A. Costa, 1853)	+		+	+			
Orthops (*Orthops*) *kalmii* (Linnaeus, 1758)	+	+	+	+	+	+	+
Genus *Orthotylus* Fieber, 1858							
Orthotylus (*Melanotrichus*) *flavosparsus* (C.R. Sahlberg, 1841)	+	+	+	+	+	+	+
Orthotylus (*Orthotylus*) *marginalis* Reuter, 1883	+		+	+	+	+	+
Orthotylus (*Orthotylus*) *nassatus* (Fabricius, 1787)	+	+	+	+	+	+	+
Orthotylus (*Orthotylus*) *obscurus* Reuter, 1875	+						
Genus *Paredrocoris* Reuter, 1878							
Paredrocoris pectoralis Reuter, 1878	+						
Genus *Phoenicocoris* Reuter, 1875							
Phoenicocoris obscurellus (Fallén, 1829)	+						
Genus *Phytocoris* Fallen, 1814							
**Phytocoris* (*Eckerleinius*) *obliquoides* Wagner, 1959	+			+			

Phytocoris (*Exophytocoris*) *scitulus* Reuter, 1908					+		
Phytocoris (*Leptophytocoris*) cf. *chardoni* Puton, 1887	+						
Phytocoris (*Leptophytocoris*) *ustulatus* Herrich-Schaeffer, 1835	+		+				
Phytocoris (*Phytocoris*) *tiliae* (Fabricius, 1777)	+	+	+	+			
Genus *Pilophorus* Hahn, 1826							
Pilophorus cinnamopterus (Kirschbaum, 1856)	+		+		+	+	+
Pilophorus clavatus (Linnaeus, 1767)			+	+	+	+	+
Pilophorus pusillus Reuter, 1878	+	+	+	+	+	+	+
Genus *Plagiognathus* Fieber, 1858							
Plagiognathus bipunctatus Reuter, 1883	+	+	+	+	+	+	+
Plagiognathus chrysanthemi (Wolff, 1804)	+	+	+	+	+	+	+
Plagiognathus fulvipennis (Kirschbaum, 1856)	+	+	+	+	+	+	+
Genus *Polymerus* Hahn, 1831							
Polymerus (*Poeciloscytus*) *cognatus* (Fieber, 1858)	+	+	+	+	+		+
Polymerus (*Poeciloscytus*) *microphthalmus* Wagner, 1951	+				+	+	
Polymerus (*Poeciloscytus*) *unifasciatus* (Fabricius, 1794)	+			+	+	+	+
Polymerus (*Poeciloscytus*) *vulneratus* (Panzer, 1806)	+	+	+	+	+	+	+
Genus *Psallus* Fieber, 1858							
Psallus lepidus Fieber, 1858	+	+	+				+
**Psallus oleae* Wagner, 1963			+		+		
Psallus pinicola Reuter, 1875	+		+	+			
Psallus variabilis Fallen, 1807					+		+
Genus *Reuteria* Puton, 1875							
Reuteria marqueti Puton, 1875	+				+		+
Genus *Rhabdomiris* Wagner, 1968							
Rhabdomiris striatellus striatellus (Fabricius, 1794)	+						
Genus *Stenodema* Laporte, 1833							
Stenodema (*Brachystira*) *calcarata* (Fallén, 1807)	+	+	+	+	+	+	+
Stenodema (*Brachystira*) *trispinosa* Reuter, 1904	+			+	+		
Stenodema (*Stenodema*) *holsata* (Fabricius, 1787)	+		+				+
Stenodema (*Stenodema*) *laevigata* (Linnaeus, 1758)	+	+	+	+	+	+	+
Stenodema (*Stenodema*) *turanica* Reuter, 1904	+	+	+	+	+	+	+
Stenodema (*Stenodema*) *virens* (Linnaeus, 1767)	+	+	+	+	+	+	+

Genus *Stenotus* Jakovlev, 1877							
Stenotus binotatus (Fabricius, 1794)	+		+		+		+
Genus *Sthenarus* Fieber, 1858							
Sthenarus roseri (Herrich-Schaeffer, 1838)	+	+	+	+	+	+	+
Genus *Strongylocoris* Blanchard, 1840							
Strongylocoris leucocephalus (Linnaeus, 1758)	+					+	+
Strongylocoris niger (Herrich-Schaeffer, 1835)	+						+
Genus *Taylorilygus* Leston, 1952							
Taylorilygus apicalis (Fieber, 1861)							+
Genus *Trigonotylus* Fieber, 1858							
Trigonotylus pulchellus (Hahn, 1834)	+	+	+	+	+	+	+
Trigonotylus ruficornis (Geoffroy, 1785)	+	+	+	+	+	+	+
Trigonotylus tenuis Reuter, 1893	+						
Family Nabidae A. Costa, 1853							
Genus *Himacerus* J.P. Wolff, 1811							
Himacerus (*Anaptus*) *major* (A. Costa, 1842)	+						
Himacerus (*Aptus*) *mirmicoides* (O. Costa, 1834)	+		+				
Genus *Nabis* Latreille, 1802							
Nabis (*Nabis*) *ferus* (Linnaeus, 1758)	+				+		
Nabis (*Nabis*) *pseudoferus* Remane, 1949	+	+	+	+			+
Nabis (*Nabis*) *pseudoferus orientarius* Remane, 1963	+						
Nabis (*Nabis*) *punctatus* A. Costa, 1847	+						
Family Reduviidae Latreille, 1807							
Genus *Coranus* Curtis, 1833							
Coranus griseus (Rossi, 1790)	+	+		+	+	+	
Coranus kerzhneri Putshkov, 1982	+		+			+	+
Genus *Ectomocoris* Mayr, 1865							
Ectomocoris caucasicus Linnavuori, 1972		+					
Ectomocoris ululans (Rossi, 1970)	+				+		
Genus *Nagusta* Stål, 1859							
Nagusta goedelii (Kolenati, 1857)	+		+			+	+
Genus *Oncocephalus* Klug, 1830							
Oncocephalus pilicornis Reuter, 1882					+		
Oncocephalus squalidus (Rossi, 1790)	+				+		

Oncocephalus thoracicus Fieber, 1861			+	+			
Genus *Peirates* Serville, 1831							
Peirates hybridus (Scopoli, 1763)	+	+	+	+	+		
Peirates strepitans Rambur, 1839					+	+	
Genus *Reduvius* Fabricius, 1775							
Reduvius pallipes Klug, 1830	+	+		+	+	+	+
Reduvius personatus (Linnaeus, 1758)				+	+	+	+
Genus *Rhynocoris* Hahn, 1833							
Rhynocoris bipustulatus (Fieber, 1861)					+		
Rhynocoris ibericus Kolenati, 1856	+			+			
Rhynocoris iracundus (Poda, 1761)	+						
Rhynocoris punciventris (Herrich Schaeffer, 1848)	+	+	+	+	+	+	+
Family Tingidae Laporte, 1832							
Genus *Agramma* Stephens, 1829							
Agramma (*Agramma*) *laetum* (Fallén, 1807)	+						
Genus *Catoplatus* Spinola, 1837							
Catoplatus brevicornis Akramovskaja & Golub, 1973	+						
Catoplatus carthusianus (Goeze, 1778)	+		+				
Catoplatus hilaris Horváth, 1906	+						
Catoplatus nigriceps Horváth, 1905	+						
Genus *Copium* Thunberg, 1822							
Copium adumbratum (Horváth, 1891)	+						
Copium clavicorne (Linnaeus, 1758)	+						
Genus *Derephysia* Spinola, 1837							
Derephysia (Derephysia) sinuatocollis Puton, 1879	+						
Genus *Dictyla* Stål, 1874							
Dictyla echii (Schrank, 1782)	+			+			
Dictyla nassata (Puton, 1874)	+						
Dictyla platyoma (Fieber, 1861)	+						
Dictyla rotundata (Herrich-Schaeffer, 1835)	+						
Genus *Elasmotropis* Stål, 1874							
Elasmotropis testacea selecta (Horváth, 1891)	+						
Genus *Kalama* Puton, 1876							
Kalama tricornis (Schrank, 1801)	+						

Genus *Monosteira* A. Costa, 1862							
Monosteira unicostata (Mulsant & Rey, 1852)	+						
Genus *Physatocheila* Fieber, 1844							
Physatocheila confinis (Horváth, 1905)	+						
Physatocheila dumetorum (Herrich-Schaeffer, 1838)	+			+			
Genus *Stephanitis* Stål, 1873							
Stephanitis (*Stephanitis*) *pyri* (Fabricius, 1775)	+		+	+	+		+
Genus *Tingi*s Fabricius, 1803							
Tingis (*Tingis*) *angustata* (Herrich-Schaeffer, 1838)	+		+				
Tingis (*Tingis*) *auriculata* (A. Costa, 1847)	+		+				
Infraorder Pentatomomorpha							
Family Alydidae Amyot & Serville, 1843							
Genus *Alydus* Fabricius, 1803							
Alydus calcaratus (Linnaeus, 1758)	+		+	+			
Genus *Camptopus* Amyot & Serville, 1843							
Camptopus bifasciatus Fieber, 1864	+	+					
Camptopus lateralis (Germar, 1817)	+	+	+	+	+	+	+
Camptopus tragacanthae (Kolenati, 1845)	+	+					
Genus *Megalotomus* Fieber, 1860							
Megalotomus ornaticeps (Stål, 1858)	+						
Family Berytidae Fieber, 1851							
Genus *Berytinus* Kirkaldy, 1900							
Berytinus (*Lizinus*) *geniculatus* (Horváth, 1885)	+			+			
Family Coreidae Leach, 1815							
Genus *Arenocoris* Hahn, 1834							
Arenocoris waltlii (Herrich-Schaeffer, 1834)	+		+				
Genus *Bathysolen* Fieber, 1860							
Bathysolen nubilus (Fallén, 1807)	+				+		
Genus *Centrocoris* Kolenati, 1845							
Centrocoris spiniger (Fabricius, 1781)	+	+			+		+
Centrocoris variegatus Kolenati, 1845	+		+	+	+	+	+
Genus *Ceraleptus* A. Costa, 1847							
Ceraleptus gracilicornis (Herrich-Schäffer, 1835)	+						
Genus *Coreus* Fabricius, 1794							
Coreus marginatus (Linneaus, 1758)	+		+	+	+	+	+

Genus *Coriomeris* Westwood, 1842							
Coriomeris affinis (Herrich-Schäffer, 1839)	+						
Coriomeris denticulatus (Scopoli, 1763)	+						
Coriomeris hirticornis (Fabricius, 1794)	+		+	+	+	+	+
Coriomeris scabricornis (Panzer, 1809)	+			+	+		+
Genus *Enoplops* Ammot & Serville, 1843							
Enoplops disciger (Kolenati 1845)	+			+			
Genus *Gonocerus* Berthold, 1827							
Gonocerus acuteangulatus (Goeze, 1778)	+		+		+	+	+
Gonocerus juniperi Herrich-Schaeffer, 1835					+		
Gonocerus patellatus Kiritshenko, 1916	+						
Genus *Leptoglossus* Guérin-Méneville, 1831							
Leptoglossus occidentalis Heidemann, 1910				+			+
Genus *Phyllomorpha* Laporte, 1833							
Phyllomorpha lacerata Herrich-Schaeffer, 1835	+						
Phyllomorpha laciniata (Villers, 1789)	+			+			
Genus *Spathocera* Stein, 1860							
Spathocera lobata (Herrich-Schaeffer, 1840)	+						
Genus *Syromastus* Berthold, 1827							
Syrometus rhombeus (Linnaeus, 1767)	+					+	+
Family Cydnidae Billberg, 1820							
Genus *Cydnus* Fabricius, 1803							
Cydnus aterrimus (Forster, 1771)	+				+	+	+
Genus *Macrocytus* Fieber, 1860							
Macroscytus brunneus (Fabricius, 1803)		+		+	+		
Genus *Canthophorus* Mulsant & Rey, 1866							
Canthophorus dubius (Scopoli, 1763)	+		+		+	+	+
Canthophorus melanopterus (Herrich-Schäffer, 1835)	+						
Canthophorus maculipes (Mulsant & Rey, 1852)	+		+				
Genus *Legnotus* Schiødte, 1848							
Legnotus picipes (Fallén, 1807)	+						
Genus *Ochetostethus* Fieber, 1860							
Ochetostethus opacus (Scholtz, 1847)	+						
Genus *Sehirus* Amyot & Serville, 1843							

**Sehirus dissimilis* Horváth, 1919	+						+
Sehirus luctuosus Mulsant & Rey, 1866	+						
Sehirus morio (Linnaeus, 1761)	+						
Sehirus robustus Horváth, 1895	+						
Genus *Tritomegas* Amyot & Serville, 1843							
Tritomegas bicolor (Linnaeus, 1758)	+						
Tritomegas sexmaculatus (Rambur, 1839)	+				+		+
Family Cymidae Baerensprung, 1860							
Genus *Cymus* Hahn, 1832							
Cymus melanocephalus Fieber, 1861	+		+				
Family Geocoridae Baerensprung, 1860							
Genus *Geocoris* Fallen, 1814							
Geocoris (*Geocoris*) *megacephalus* (Rossi, 1790)					+		
Geocoris (*Piocoris*) *erythrocephalus* (Lepeletier & Serville, 1825)	+				+		
Family Heterogastridae Stål, 1872							
Genus *Heterogaster* Schilling, 1829							
Heterogaster artemisiae Schilling, 1829	+						
Heterogaster cathariae (Geoffroy, 1785)	+						
Heterogaster urticae (Fabricius, 1775)	+		+				
Genus *Platyplax* Fieber, 1860							
Platyplax salviae (Schilling, 1829)	+						
Family Lygaeidae Schilling, 1829							
Genus *Kleidocerys* Stephens, 1829							
Kleidocerys Resedae (Panzer, 1797)	+						+
Genus *Lygaeus* Fabricius, 1794							
Lygaeus equestris (Linnaeus, 1758)	+		+	+	+	+	+
Genus *Melanocoryphus* Stål, 1872							
Melanocoryphus albomaculatus (Goeze, 1778)	+			+			
Genus *Nysius* Dallas, 1852							
Nysius cymoides (Spinola, 1837)	+		+		+		
Nysius graminicola (Kolenati, 1845)	+		+		+		
Nysius helveticus (Herrich-Schäffer, 1850)	+		+				
Nysius senecionis (Schilling, 1829)	+		+		+		
Nysius thymi (Wolff, 1804)	+		+		+		

Genus *Ortholomus* Stål, 1872							
Ortholomus punctipennis (Herrich-Schäffer, 1838)	+						
Genus *Paranysius* Horváth, 1895							
Paranysius fraterculus Horváth, 1895	+						
Genus *Spilostethus* Stål, 1868							
Spilostethus pandurus (Scopoli, 1763)	+	+	+	+	+	+	
Spilostethus saxatilis (Scopoli, 1763)	+	+		+	+		
Genus *Tropidothorax* Bergroth, 1894							
Tropidothorax leucopterus (Goeze, 1778)	+		+		+	+	
Family Oxycarenidae Stål, 1862							
Genus *Auchenodes* Horvath, 1891							
Auchenodes costalis (Lethierry, 1877)	+						
Genus *Macroplax* Fieber, 1860							
Macroplax fasciata (Herrich-Schäffer, 1835)	+						
Genus *Metopoplax* Fieber, 1860							
Metopoplax origani (Kolenati, 1845)	+				+		+
Genus *Microplax* Fieber, 1860							
Microplax interrupta (Fieber, 1837)	+						
Genus *Oxycarenus* Fieber, 1837							
Oxycarenus (Euoxycarenus) pallens (Herrich-Schäffer, 1850)	+						
Oxycarenus (Oxycarenus) hyalinipennis (A. Costa, 1843)					+		+
Family Pachygronthidae Stål, 1865							
Genus *Cymophyes* Fieber, 1870							
Cymophyes ochroleuca Fieber, 1870					+		
Family Pentatomidae Leach, 1815							
Genus *Acrosternum* Fieber, 1861							
Acrosternum breviceps (Jakovlev, 1889)					+		
Acrosternum heegeri Fieber, 1861	+		+		+	+	+
Acrosternum millieri (Mulsant & Rey, 1866)	+						
Genus *Aelia* Fabricius, 1803							
Aelia acuminata (Linnaeus, 1758)	+		+	+	+		+
Aelia furcula Fieber, 1868	+	+	+	+	+	+	
Aelia rostrata Boheman, 1852	+	+	+	+	+	+	+
Aelia virgata (Herrich-Schäffer, 1841)	+	+		+			

Genus *Ancyrosoma* Amyot & Serville, 1843							
Ancyrosoma leucogrammes (Gmelin, 1790)	+		+	+	+	+	+
Genus *Antheminia* Mulsant & Rey, 1866							
Antheminia lunulata (Goeze, 1778)	+		+	+			
Antheminia pusio (Kolenati, 1846)	+			+			
Genus *Apodiphus* Spinola, 1837							
Apodiphus amygdali (Germar, 1817)	+	+	+	+	+	+	+
Genus *Bagrada* Stål, 1862							
Bagrada (Nitilia) abeillei Puton, 1881	+		+				
Bagrada (Nitilia) kaufmanni Oshanin, 1870	+		+				
Genus *Brachynema* Mulsant & Rey, 1852							
Brachynema cinctum (Fabricius, 1775)	+						
Brachynema germarii (Kolenati, 1846)					+		
Genus *Carpocoris* Kolenati, 1846							
Carpocoris (Carpocoris) coreanus Distant, 1899	+						
Carpocoris (Carpocoris) fuscispinus (Boheman, 1849)	+		+	+	+		+
Carpocoris (Carpocoris) mediterraneus Tamanini, 1958	+		+	+	+	+	+
Carpocoris (Carpocoris) melanocerus Mulsant, 1852			+	+	+	+	
Carpocoris (Carpocoris) pudicus (Poda, 1761)	+		+		+	+	+
Carpocoris (Carpocoris) purpureipennis (De Geer, 1773)	+		+	+	+	+	+
Genus *Chlorochroa* Stål, 1872							
Chlorochroa (Rhytidolomia) juniperina (Linnaeus, 1758)	+						
Genus *Cnephosa* Jakovlev, 1880							
Cnephosa flavomarginata Jakovlev, 1880	+						
Genus *Codophila* Mulsant & Rey, 1866							
Codophila maculicollis (Dallas, 1851)	+		+		+	+	+
Codophila pusio (Kolenati, 1846)	+			+			
Codophila varia (Fabricius, 1787)	+			+	+	+	
Genus *Derula* Mulsant & Rey, 1856							
Derula flavoguttata Mulsant & Rey, 1856	+						
Genus *Dolycoris* Mulsant & Rey, 1866							
Dolycoris baccarum (Linnaeus, 1758)	+	+	+	+	+	+	+

Genus *Eurydema* Laporte De Castelnau, 1832							
Eurydema blandum Horvath, 1903	+	+	+	+	+	+	+
Eurydema (Horvatheurydema) fieberi Fieber, 1837	+				+		
* *Eurydema formosum* (Puton, 1895)		+					
Eurydema laticolle Horvath, 1907					+		
Eurydema (Eurydema) oleraceum (Linnaeus, 1758)	+		+	+	+		+
Eurydema (Eurydema) ornatum (Linnaeus, 1758)	+	+	+	+	+	+	+
Eurydema (Horvatheurydema) rugulosa (Dohrn, 1860)					+		
Eurydema (Rubrodorsalium) ventrale Kolenati, 1846	+		+		+	+	+
Genus *Eysarcoris* Hahn, 1834							
Eysarcoris inconspicuus (Herrich-Schäffer, 1844)	+	+	+	+	+	+	+
Eysarcoris ventralis (Westwood, 1837)	+		+		+	+	+
Genus *Graphosoma* Laporte De Castelnae, 1832							
Graphosoma italicum (Müller, 1766)	+	+	+	+	+	+	+
Graphosoma lineatum (Linnaeus, 1758)	+		+	+	+	+	+
Graphosoma melanoxanthum Horvath, 1903	+						
Graphosoma semipunctatum (Fabricius, 1775)	+	+	+	+	+	+	+
Graphosoma stali Horváth, 1881		+					
Genus *Holcostethus* Fieber, 1860							
Holcostethus albipes (Fabricius, 1781)	+						+
Holcostethus vernalis (Wolff, 1804)	+	+	+	+	+	+	+
Genus *Jalla* Hahn, 1832							
Jalla dumosa (Linnaeus, 1758)				+			
Genus *Mustha* Amyot & Serville, 1843							
Mustha spinosula (Lefebvre, 1831)	+	+	+	+	+	+	+
Mustha vicina Hoberlandt, 1997		+					
Genus *Neottiglossa* Kirby, 1837							
Neottiglossa bifida (A. Costa, 1847)	+			+			+
Neottiglossa leporina (Herrich-Schäffer ,1830)	+		+	+	+	+	
Genus *Nezara* Amyot & Serville, 1843							
Nezara viridula (Linnaeus, 1758)	+	+	+	+	+	+	+
Genus *Palomena* Mulsant & Rey, 1860							
Palomena prasina (Linnaeus, 1761)	+		+	+	+	+	+
Genus *Pausias* Jakovlev, 1905							

Pausias martini (Puton, 1890)					+		
Genus *Picromerus* Amyot & Serville, 1843							
* *Picromerus brachypterus* Ahmad & Önder, 1990			+			+	
Genus *Piezodorus* Fieber, 1860							
Piezodorus lituratus (Fabricius, 1794)	+	+	+		+		
Genus *Podops* Laporte, 1833							
Podops (Opocrates) rectidens Horvath, 1883							+
Genus *Putonia* Stål, 1872							
Putonia asiatica Jakovlev, 1885	+						
Genus *Rhaphigaster* Laporte De Castelnau, 1862							
Rhaphigaster nebulosa (Pod,a 1761)	+	+	+	+	+	+	+
Genus *Rhombocoris* Mary, 1864							
Rhombocoris regularis (Herrich-Schäffer, 1851)	+						
Genus *Risibia* Horváth, 1888							
Risibia verbasci Lodos & Önder, 1980	+						
Genus *Sciocoris* Fallén, 1829							
Sciocoris (Sciocoris) amoenus (Brullé, 1832)	+		+	+			
Sciocoris (Sciocoris) cursitans (Fabricius, 1794)	+						
Sciocoris (Sciocoris) distinctus Fieber, 1851	+			+			
Sciocoris (Sciocoris) macrocephalus Fieber, 1851	+						
Sciocoris (Sciocoris) ochraceus Fieber, 1861					+		
Sciocoris (Sciocoris) ogivus Jakovlev, 1894	+						
Sciocoris (Sciocoris) sulcatus Fieber, 1851	+						
Genus *Stagonomus* Gorski, 1852							
Stagonomus (Stagonomus) amoenus (Brullé, 1832)	+		+	+			
Stagonomus (Stagonomus)bipunctatus (Linnaeus, 1758)	+		+		+		+
Stagonomus (Stagonomus) pusillus (Herrich-Schäffer, 1830)					+		
Genus *Staria* Dohrn, 1860							
Staria lunata (Hahn, 1835)	+						+
Genus *Stenozygum* Fieber, 1861							
Stenozygum coloratum (Klug, 1845)					+		
Genus *Tarisa* Amyot & Serville, 1843							
Tarisa virescens Herrich-Schäffer, 1851	+						
Genus *Tholagmus* Stål, 1860							

Tholagmus flavolineatus (Fabricius, 1798)	+				+		
Genus *Ventocoris* Hahn, 1834							
Ventocoris (Selenodera) achivus (Horváth, 1889)					+		
Ventocoris (Selenodera) fischeri (Herrich-Schäffer, 1851)				+	+		
Ventocoris (Selenodera) halophilus (Jakovlev, 1874)	+						
Ventocoris (Ventocoris) rusticus (Fabricius, 1781)			+	+	+		
Genus *Zicrona* Amyot & Serville, 1843							
Zicrona coerulea (Linnaeus, 1758)	+		+		+		
Family Piesmatidae Amyot & Serville, 1843							
Genus *Piesma* Lepeletier & Serville, 1828							
Piesma maculatum (Laporte, 1833)	+						
Genus *Parapiesma* Péricart, 1974							
Parapiesma atriplicis (Frey-Gessner, 1863)	+						
Parapiesma salsolae (Becker, 1867)	+						
Family Plataspidae Dallas, 1851							
Genus *Coptosoma* Laporte, 1833							
Coptosoma scutellatum (Geoffroy, 1785)	+						
Family Pyrrhocoridae Fieber, 1860							
Genus *Pyrrhocoris* Fallen, 1814							
Pyrrhocoris apterus (Linnaeus, 1758)	+	+	+	+	+	+	+
Pyrrhocoris marginatus (Kolenati, 1845)	+						
Genus *Scantius* Stål, 1866							
Scantius aegyptius (Linnaeus, 1758)	+	+		+	+		
Family Rhopalidae Amyot & Audinet-Serville, 1843							
Genus *Agraphopus* Stal, 1872							
Agraphopus lethierryi Stal, 1872	+						
Genus *Brachycarenus* Fieber, 1861							
Brachycarenus tigrinus (Schilling, 1829)	+	+	+	+	+		+
Genus *Chorosoma* Curtis, 1830							
Chorosoma schillingii (Schilling, 1829)	+			+			
Genus *Corizomorpha* Jakovlev, 1883							
Corizomorpha janowskyi Jakovlev, 1883	+						
Genus *Corizus* Fallén, 1814							
Corizus hyoscyami (Linnaeus, 1758)	+	+	+	+	+	+	+

Genus *Liorhyssus* Stål, 1872							
Liorhyssus hyalinus (Fabricius, 1794)	+	+	+	+	+	+	+
Genus *Maccevethus* Dallas, 1852							
Maccevethus caucasicus (Kolenati, 1845)	+	+	+	+			
Maccevethus corsicus Signoret, 1862	+						+
Maccevethus errans (Fabricius, 1794)	+						
Genus *Rhopalus* Schilling, 1827							
Rhopalus (*Aeschyntelus*) *maculatus* (Fieber, 1837)	+						
Rhopalus (*Rhopalus*) *conspersus* (Fieber, 1837)	+						
Rhopalus (*Rhopalus*) *parumpunctatus* Schilling, 1829	+						
Rhopalus (Rhopalus) rufus Schilling, 1829	+			+	+		+
Rhopalus (*Rhopalus*) *subrufus* (Gmelin, 1790)	+	+					+
Genus *Stictopleurus* Stål, 1872							
Stictopleurus abutilon (Rossi, 1790)	+						
Stictopleurus pictus (Fieber, 1861)	+	+					
Stictopleurus punctatonervosus (Goeze, 1778)	+	+	+	+	+	+	+
Stictopleurus subtomentosus (Rey, 1888)	+						
Stictopleurus unicolor (Jakovlev, 1873)	+						
Family Rhyparochromidae Amyot & Audinet-Serville, 1843							
Genus *Aellopus* Wolff, 1811							
Aellopus atratus (Goeze, 1778)				+			
Genus *Aphanus* Laporte de Castelnau, 1833							
Aphanus rolandri (Linnaeus, 1758)	+						
Genus *Beosus* Amyot & Serville, 1843							
Beosus maritimus (Scopoli, 1763)	+	+	+	+	+	+	
Beosus quadripunctatus (Müller, 1766)	+		+				
Genus *Drymus* Fieber, 1860							
Drymus (*Sylvadrymus*) *brunneus confinis* Reuter, 1893	+						
Drymus (*Sylvadrymus*) *sylvaticus* (Fabricius, 1775)	+						
Genus *Emblethis* Fieber, 1860							
Emblethis denticollis Horváth, 1878	+		+	+	+		
Emblethis osmanus Seidenstücker, 1963	+		+	+	+	+	
Genus *Gastrodes* Westwood, 1840							

Gastrodes grossipes (De Geer, 1773)	+						
Genus *Graptopeltus* Stål, 1872							
Graptopeltus lynceus (Fabricius, 1775)	+						
Genus *Lasiocoris* Fieber, 1860							
Lasiocoris anomalus (Kolenati, 1845)	+						
Genus *Megalonotus* Fieber, 1860							
Megalonotus sabulicola (Thomson, 1870)	+						
Genus *Paromius* Fieber, 1860							
Paromius gracilis (Rambur, 1839)	+						
Genus *Peritrechus* Fieber, 1860							
Peritrechus geniculatus (Hahn, 1832)	+						
Peritrechus gracilicornis Puton, 1877	+		+				
Genus *Plinthisus* Stephen, 1829							
Plinthisus (Plinthisus) major Horváth, 1876	+						
Genus *Pterotmetus* Amyot & Serville, 1843							
Pterotmetus staphyliniformis (Schilling, 1829)	+			+			
Genus *Raglius* Stål, 1872							
Raglius confusus (Reuter, 1886)	+						+
Genus *Rhyparochromus* Hahn, 1826							
Rhyparochromus pini (Linnaeus, 1758)	+			+	+		
Rhyparochromus phoeniceus (Rossi, 1794)	+						
Rhyparochromus sanguineus (Douglas & Scott, 1868)	+						
Rhyparochromus vulgaris (Schilling, 1829)	+				+		
Genus *Remaudiereana* Hoberlandt, 1954							
Remaudiereana annulipes (Baerensprung, 1859)					+		
Genus *Scolopostethus* Fieber, 1860							
Scolopostethus affinis (Schilling, 1829)	+						
Genus *Stygnocoris* Douglas & Scott, 1865							
Stygnocoris rusticus (Fallen, 1807)	+						
Genus *Xanthochilus* Stål, 1872							
Xanthochilus quadratus (Fabricius, 1798)	+				+		
Xanthochilus saturnius (Rossi, 1790)	+						
Family Scutelleridae Leach, 1815							
Genus *Solenosthedium* Spinola, 1837							

Solenosthedium bilunatum (Lefebvre, 1827)					+		
Genus *Eurygaster* Laporte, 1833							
Eurygaster austriaca (Schrank, 1776)	+		+	+	+		+
Eurygaster dilaticollis Dohrn, 1860	+		+	+			
Eurygaster integriceps Puton, 1881	+	+	+	+	+		+
Eurygaster maura (Linnaeus, 1758)	+	+	+	+	+		
Eurygaster testudinaria (Geoffroy, 1785)	+						
Genus *Psacasta* Germar, 1839							
Psacasta (*Psacasta*) *exanthematica* (Scopoli, 1763)	+			+			
Genus *Odontoscelis* Laporte, 1833							
Odontoscelis (*Odontoscelis*) *fuliginosa* (Linnaeus, 1761)	+						
Genus *Ellipsocoris* Mayr, 1864							
Ellipsocoris trilineatus Mayr, 1864	+						
Genus *Odontotarsus* Laporte, 1833							
Odontotarsus impictus Jakovlev, 1886	+	+					
Odontotarsus purpureolineatus (Rossi, 1790)	+		+	+	+		+
Odontotarsus rufescens Fieber, 1861	+	+	+	+	+		+
Genus *Phimodera* Germar, 1839							
Phimodera flori Fieber, 1863	+						
Family Stenocephalidae Dallas, 1852							
Genus *Dicranocephalus* Hahn, 1826							
Dicranocephalus agilis (Scopoli, 1763)	+		+	+	+	+	+
Dicranocephalus albipes (Fabricius, 1781)	+		+			+	
Dicranocephalus setulosus (Ferrari, 1874)	+						
Subtotal	**357**	**105**	**156**	**171**	**201**	**121**	**146**

Remarks: EA - Eastern Anatolia, **SA -** Southeastern Anatolia, **BS -** Black Sea, **CA -** Central Anatolia, **MD -** Mediterranean, **A -** Aegean, **M -** Marmara.

There are great differences in species composition and richness between the geographic regions of Türkiye (Tab. 1, Fig. 2). In this study, 357 species, 205 genera and 27 families of the Heteroptera have been recorded from Eastern Anatolia (87,7% of the recorded species), 105 species, 71 genera and 14 families from South-eastern Anatolia (25,8%), 156 species, 98 genera and 17 families from Black Sea (38,3%), 171 species, 112 genera and 20 families from Central Anatolia(42%), 201 species, 120 genera and 21 families from Mediterranean (49,4%), 121 species, 78 genera and 13 families from Aegean (29,7%), 146 species, 97 genera and 17 families from Marmara (35,9%). The diversity of species (357), genus (205) and family (27) is highest in the Eastern Anatolia region. Besides, it determined that six species of Turkish Heteroptera are endemic and are located in Türkiye (Table 2).

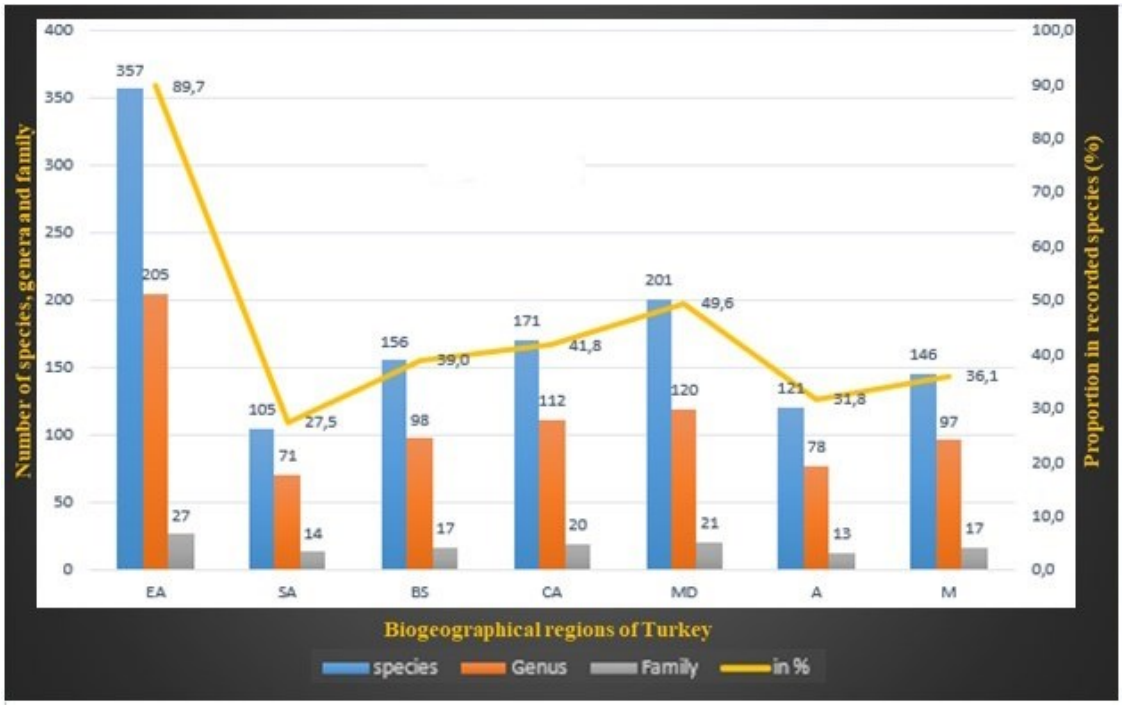

Figure 2. Number of species, genera, and families of Heteroptera in the biogeographical regions of Türkiye (EA - Eastern Anatolia, SA - Southeastern Anatolia, BS - Black Sea, CA - Central Anatolia, MD -Mediterranean, A - Aegean, M - Marmara).

Table 2: Distribution of endemic species in Biogeographic Regions of Türkiye

	EA	**SA**	**BS**	**CA**	**MD**	**A**	**M**
Eurycolpus aureolus Seidenstücker, 1961	+	+		+	+		
Phytocoris (Eckerleinius) obliquoides Wagner, 1959	+			+			
Psallus oleae Wagner, 1963			+		+		
Picromerus brachypterus Ahmad & Önder, 1990			+			+	
Total species	**2**	**1**	**2**	**2**	**2**	**1**	

There are great differences in endemic species composition and richness between the bio-geographic regions of Türkiye (Tab. 2). In this study have been recorded two species from Eastern Anatolia, one species from Southeastern Anatolia, two species from Black Sea, two species from Central Anatolia, two species from Mediterranean, one species Aegean and one species from Marmara. As a result, there is a high probability that all geographical regions can also appear.

DISCUSSION

Infraorder Gerromorpha are surface inhabiting taxa found in a wide array of habitats from the smallest, often temporary, bodies of fresh water to the world's open oceans. They in eight families are represented by more than 2000 species and 150 genera (J. Polhemus & D. Polhemus, 2008; Henry, 2017). In the Palearctic region, they are represented by 248 species from 42 genera (Aukema et al., 2013), while they are represented by 38 species and subspecies from 9 genera within 5 families in our country (Yazıcı 2020; Fent et al., 2011). This study also reported 4 species belonging to 2 genera and one family from Gerromorpha (Gerridae family).

The Nepomorpha are characterized by short antennae concealed partly or entirely by the eyes. All are predatory, except some Corixidae. Most can inflict painful bites. Almost all of them are aquatic and have legs modified for swimming (Schuh & Slater, 1995; Henry, 2017). Approximately 140 genera and 2309 species of Nepomorpha are known (Polhemus & Polhemus, 2008). This number in the Palearctic region is 268 species of 41 genera (Henry, 2017) while they are represented by 55 species and subspecies from 19 genera within 9 families in Türkiye (Yazıcı, 2020, Fent et al., 2011). This study reported 10 species belonging to 5 genera and 4 families from Nepomorpha (Belostomatidae, Corixidae, Nepidae and Notonectidae families).

Infraorder Leptopodomorpha comprises four families separated into the superfamilies Leptopodoidea and Saldoidea (Henry, 2017). There are known 381 species and 64 genera in the World (Henry, 2017). This number is 268 species and 41 genera in the Palearctic region while 21 species belong to 7 genera and two families in Türkiye (Yazıcı & Bal, 2022). This study reported 3 species belonging to one genus and one family from Leptopodomorpha.

The Cimicomorpha is one of the largest and highly diversified infraorder of the Heteroptera. All members' rostrum and other morphology are adapted to feeding on animals as their prey or hosts (Kuznetsova et al., 2011). The Cimicomorpha has been separated into seven superfamilies and 17 families, including the two largest Heteropteran families, the Miridae and Reduviidae (Henry, 2017). All World known 21.271 species and 2945 genera of Cimicomorpha. In Palearctic Region recorded 5223 species belonging to 718 genera and 13 families (Aukema et al., 2013). This number is 838 species and 9 families in Türkiye (Tezcan, 2024). This study reported 177 species belonging to 93 genera and 6 families from Cimicomorpha.

Six superfamilies have been recognized in a phylogenetic analysis of the Pentatomomorpha. The monophyly of the Pentatomo -morpha is supported by at least six synapomorphies that include the presence of lamellate pulvilli, abdominal trichobothria, an apically bulbous spermatheca, similar accessory salivary glands, an embryonic egg burster, and lack of a true operculum (Henry, 2017). They have been 18.411 species belonging to 2750 genera in the World (Henry, 2017). This number is 3502 species and 782 genera in the Palearctic region (Aukema et al., 2013) while there are more than 665 species and 18 families in Türkiye (Tezcan, 2024). This study reported 213 species belonging to 120 genera and 18 families from Pentatomomorpha.

In this study, total 407 species of 221 genera belonging to 30 families of Heteroptera were recorded from Atatürk University Biodiversity Science Museum (ABBM) Erzurum in Türkiye: 5 species belonging to 3 genera of Alydidae, 8 species belonging to 4 genera of Anthocoridae, 1 species belonging to 1 genus of Belostomatidae, 1 species belonging to 1 genus of Berytidae, 19 species belonging to 12 genera of Coreidae, 5 species belonging to 2 genera of Corixidae, 13 species belonging to 7 genera of Cydnidae, 1 species belonging to 1 genus of Cymidae, 2 species belonging to 1 genus of Geocoridae, 4 species belonging to 2 genera of Gerridae, 4 species belonging to 2 genera of Heterogastridae, 1 species belonging to 1 genus of Lyctocoridae, 13 species belonging to 8 genera of Lygaeidae, 126 species belonging to 68 genera of Miridae, 6 species belonging to 2 genera of Nabidae, 1 species belonging to 1 genus of Nepidae, 3 species belonging to 1 genus of Notonectidae, 6 species belonging to 5 genera of Oxycarenidae, 1 species belonging to 1 genus of Pachygronthidae, 79 species belonging to 38 genera of Pentatomidae, 3 species belonging to 2 genera of Piesmatidae, 1 species belonging to 1 genus of Plataspidae, 3 species belonging to 2 genera of

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Pyrrhocoridae, 16 species belonging to 7 genera of Reduviidae, 19 species belonging to 9 genera of Rhopalidae, 27 species belonging to 19 genera of Rhyparochromidae, 3 species belonging to 1 genus of Saldidae, 13 species belonging to 7 genera of Scutelleridae, 3 species belonging to 1 genus of Stenocephalidae, 20 species belonging to 11 genera of Tingidae, Among them, four species are endemic. They are *Eurycolpus aureolus* Seidenstücker 1961, *Phytocoris* (*Eckerleinius*) *obliquoides* Wagner 1959, *Psallus oleae* Wagner 1963, and *Picromerus brachypterus* Ahmad & Önder 1990 are considered to be endemic (Table 1,2).

Additionally, the most widespread species in all zoogeographic regions are (Table 1): *Camptopus lateralis* (Germar) (Alydidae), *Orius* (O.) *niger* (Wolff) (Anthocoridae), *Adelphocoris lineolatus* (Goeze), *Adelphocoris vandalicus* (Rossi), *Calocoris roseomaculatus* (De Geer), *Campylomma nicolasi* Puton and Reuter, *Campylomma verbasci* (Meyer-Dür), *Charagochilus gyllenhalii* (Fallén), *Chlamydatus pullus* (Reuter), *Deraeocoris* (*Camptobrochis*) *punctulatus* (Fallén), *Deraeocoris* (*Camptobrochis*) *serenus* (Douglas & Scott), *Deraeocoris* (*Deraeocoris*) *rutilus* (Herrich-Schäffer), *Halticus luteicollis* (Panzer), *Liocoris tripustulatus* (Fabricius), *Lygus pratensis* (Linnaeus), *Lygus rugulipennis* Poppius, *Notostira erratica* (Linnaeus), *Oncotylus* (*O.*) *viridiflavus* (Goeze), *Orthops* (*Orthops*) *kalmii* (Linnaeus), *Orthotylus* (*Melanotrichus*) *flavosparsus* (C.R. Sahlberg), *Orthotylus* (*O.*) *nassatus* (Fabricius), *Pilophorus pusillus* Reuter, *Plagiognathus bipunctatus* Reuter, *Plagiognathus chrysanthemi* (Wolff), *Plagiognathus fulvipennis* (Kirschbaum), *Polymerus* (*Poeciloscytus*) *vulneratus* (Panzer), *Stenodema* (*Brachystira*) *calcarata* (Fallén), *Stenodema* (*S.*) *laevigata* (Linnaeus), *Stenodema* (*S.*) *turanica* Reuter, *Stenodema* (*S.*) *virens* (Linnaeus), *Sthenarus roseri* (Herrich-Schaeffer), *Trigonotylus pulchellus* (Hahn), *Trigonotylus ruficornis* (Geoffroy) (Miridae), *Aelia rostrata* Boheman, *Apodiphus amygdali* (Germar), *Dolycoris baccarum* (Linnaeus), *Eurydema blandum* Horvath, *Eurydema ornatum* (Linnaeus), *Eysarcoris inconspicuus* (Herrich-Schäffer), *Graphosoma italicum* (Müller), *Graphosoma semipunctatum* (Fabricius 1775), *Holcostethus vernalis* (Wolff), *Mustha spinosula* (Lefebvre), *Nezara viridula* (Linnaeus) (Pentatomidae), *Pyrrhocoris apterus* (Linnaeus) (Pyrrhocoridae), *Rhaphigaster nebulosa* (Poda), *Rhynocoris punciventris* (Herrich Schaeffer) (Reduviidae), *Corizus hyoscyami* (Linnaeus), *Liorhyssus hyalinus* (Fabricius), *Stictopleurus punctatonervosus* (Goeze) (Rhopalidae).

In this study, 4 species in 2 genera of Gerromorpha, 10 species in 5 genera of Nepomorpha, 3 species in one genus of Leptopodomorpha, 177 species in 92 genera of Cimicomorpha and 216 species in 121 genera of Pentatomomorpha are recorded. In total, 407 species belonging to 221 genera of 30 families of Heteroptera are recorded from Atatürk University Biodiversity Science Museum (ABBM) Erzurum in Türkiye. This number corresponds to 26% of Türkiye's Heteroptera. The study revealed that there are great differences in species composition and richness between the geographic regions of Türkiye. Especially the diversity of species (357), genus (205) and family (27) is highest in the Eastern Anatolia region. Çerçi et al. (2022) conducted a study of Heteroptera species collected from numerous localities in Anatolia, articularly Eastern Anatolia, between 1998 and 2021, and 124 species in 97 genera belonging to 20 families were recorded.

Turkish Heteroptera fauna is very rich. The great richness and diversity of the Turkish Heteroptera fauna are the result of the various topographic and climatic structure of the country. On the other hand, Türkiye is a boundary of East Mediterranean, Euro-Siberian and Irano-Turanian provinces of the Palaearctic region that caused the richness of the fauna and it is a country that is located as a bridge between Europe and Asia. It has different climatic conditions. Both geographic position and climatic differentiations have some effects on flora and fauna. Because of this, Türkiye has been

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focused by Turkish and foreign scientists for a long period. However, the knowledge of Türkiye's Heteroptera fauna is still incomplete despite the research for more than a century when considering studies in recent years. At this point, we hope that our study will encourage further research on Heteroptera in Türkiye. Such data will create a solid base for zoo-geographic research on the Turkish fauna.

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